Service Manual

MA700 U, F
74MA700 /02B
Mono Amplifier

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Please use this service manual with referring to the user guide (D.F.U.) without fail.
修理の際は、必ず取扱説明書を準備し操作方法を確認の上作業を行ってください。

marantz

model MA700

Printed in japan

4822 725 51149
First issue : 1997. 10
400S855 010 BB

MARANTZ DESIGN AND SERVICE

Using superior design and selected high grade components, **MARANTZ** company has created the ultimate in stereo sound. Only original **MARANTZ** parts can insure that your **MARANTZ** product will continue to perform to the specifications for which it is famous.

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Parts can be ordered either by mail or by Fax.. In both cases, the correct part number has to be specified.

The following infomation must be supplied to eliminate delays in processing your order :

1. Complete address
2. Complete part numbers and quantities required
3. Description of parts
4. Model number for which part is required
5. Way of shipment
6. Signature : any order form or Fax. must be signed, otherwise such part order will be considered as null and void.

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JAPAN *Technical*

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SINGAPORE

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29, LENG KEE ROAD
SINGAPORE 159099,
PHONE : +65 475 - 4555
FAX : +65 475 - 8623

SHOCK, FIRE HAZARD SERVICE TEST :

CAUTION : After servicing this appliance and prior to returning to customer, measure the resistance between either primary AC cord connector pins (with unit NOT connected to AC mains and its Power switch ON), and the face or Front Panel of product and controls and chassis bottom.

Any resistance measurement less than 1 Megohms should cause unit to be repaired or corrected before AC power is applied, and verified before it is return to the user/customer.

Ref. UL Standard NO. 1492.

In case os difficulties, do not hesitate to contact the Technical Department at above mentioned address.

1. SPECIFICATIONS

Rated output ..... 200 W, 8 Ω rms
Distortion ..... 0.02 %
Rated input level ..... 1 V rms
Frequency response (-1 dB) ..... 5 Hz to 100 kHz
S/N ratio (IHF-A) ..... 110 dB
Damping factor (1 kHz) 200
Power supply ..... 230 V AC, 50 Hz
Power consumption ..... 220 W
(Stand-by) 3.5 W

Dimensions
Width ..... 145 mm
Height ..... 146 mm
Depth ..... 472 mm
Weight ..... 8 kg

Accessories
Remote control cable ..... x 1
Speaker cable for BTL connection ..... x 1
Audio cable ..... x 1

Design and specifications are subject to change without notice.

規格

定格出力 ..... 200W 8 Ω RMS
歪　率 0.02%
定格入力レベル ..... 1V RMS
周波数特性（-1dB） ..... 5 Hz～100 kHz
SN 比（IHF-A） 110dB
ダンピングファクター（1 kHz） 200
電　源 ..... AC100V、50/60 HZ
消費電力（電気用品取締法） 220W
（スタンバイ時）3.5W

外形寸法
幅 ..... 145 mm
高さ ..... 146 mm
奥行き ..... 472 mm
重量 ..... 8 kg

付属品
リモコン用ケーブル ..... × 1
BTL 用スピーカーケーブル ..... × 1
音声用ケーブル ..... × 1

本機の規格および外観は改良のため予告なく変更することがありますが、ご了承ください。

2. IDLING CURRENT ADJUSTMENT

1. Connect a digital voltmeter to two adjustment pins J798 and J799.
2. After the setup above, turn the mains switch ON and heat up the amplifier about 10 minuet.
3. Adjust variable resistor R717(on the PCB P701) according to the digital volt meter reading. The target setting value is 10mV(37mA).

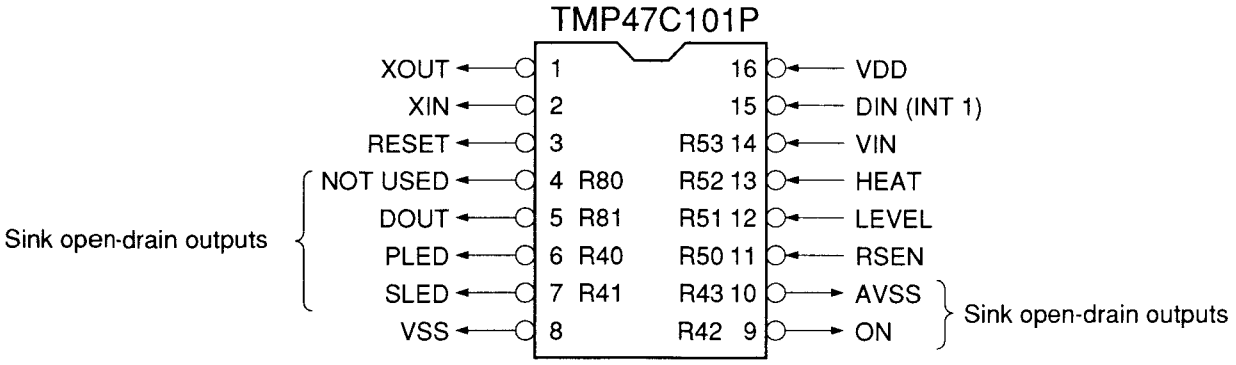
Time since power switched on		Idling current adjustment	
1 min. 30 sec.	± 20 sec	2.0 mV	± 0.2 mV
2 min.	± 20 sec	3.0 mV	± 0.2 mV
4 min.	± 20 sec	5.5 mV	± 0.3 mV
6 min.	± 20 sec	8.2 mV	± 0.3 mV
8 min		10.0 mV	± 0.5 mV

アイドリング電流調整手順

1. 調整用端子J798とJ799の2本にデジタルボルトメーターを接続します。
2. 電源スイッチをオンにし、アイドリング電流が安定するまで、およそ 10 分間放置します。
3. P701 基板上の半固定抵抗R717 を時計回りにまわしデジタルボルトメーターの値が 10mV(37mA)になるように調整します。

電源投入後経過時間		アイドリング電流調整値	
1 分 30 秒後	± 20 秒	2.0 mV	± 0.2 mV
2 分後	± 20 秒	3.0 mV	± 0.2 mV
4 分後	± 20 秒	5.5 mV	± 0.3 mV
6 分後	± 20 秒	8.2 mV	± 0.3 mV
8 分後		10.0 mV	± 0.5 mV

3. MICROCOMPUTER PIN LAYOUT



4. PORT ASSIGNMENT TABLE

Port	Pins	Name	In/Out	Active	Description
R80	4		Input		Not used
R81	5	DOUT	Output		Data output from RC5.
R82	15	DIN	Input	L	Data input to RC5.
R40	6	PLED	Output	L	Power LED.
R41	7	SLED	Output	L	Stand-by LED.
R42	9	ON	Output	L/H	Power amplifier OFF/ON
R43	10	AVSS	Output	L/H	Power amp supply voltage control. Low/High voltage.
R50	11	RSEN	Input	H/L	Power amp output muting status detection input. OFF/ON.
R51	12	LEVEL	Input	L/H	Power amp output level detection input. High/Low power.
R52	13	HEAT	Input	L/H	Heat sink overheating detection input. Overheat/Normal.
R53	14	VIN	Input	L/H	Video and DC signal detection input. Detected/Not detected.

5. POWER AMPLIFIER INTERNAL OPERATION DESCRIPTION

- **Supply B voltage switching**

Switches the supply B voltage of the power amplifier between high and low according to the audio output voltage (AVSS).
The audio output voltage is detected by the level comparator (QU05). When it exceeds about 23 Vrms, the microcomputer (QU08) switches the supply B voltage to the high voltage by activating the AVSS relay (L802) on the secondary side of the power amp's transformer.

- **Overheat protection**

The power amp is protected against overheating based on the two supply B voltages.
The temperature is detected by the posistor (QN99) which is attached to the heat sink using a screw. The microcomputer (QU08) reads the temperature data and, when it exceeds 100 degrees C, it initiates the overheat protection operation for reducing the heat sink temperature by forcing the supply B voltage to be fixed at "Low" to reduce the output power.

パワーアンプ内部動作説明

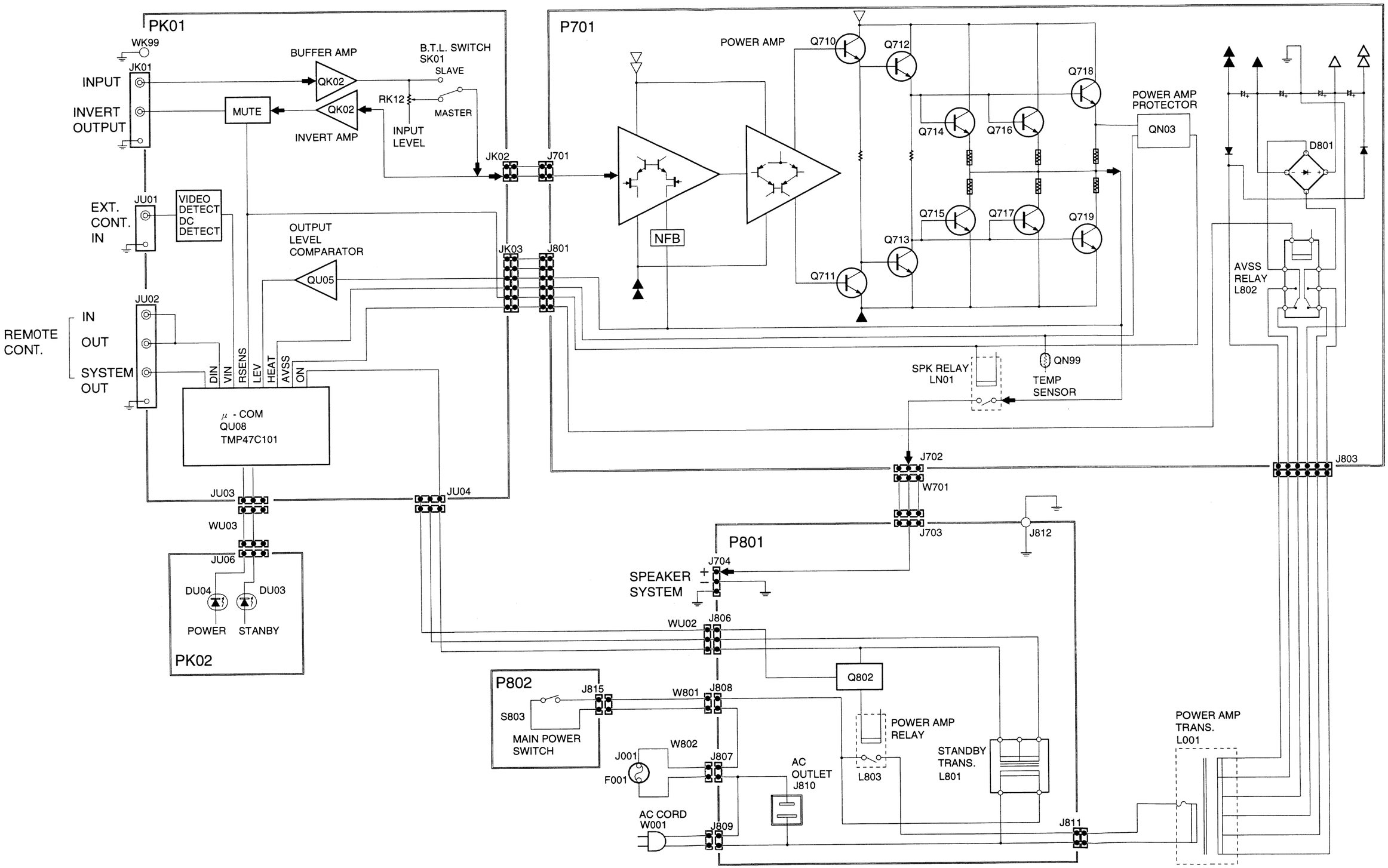
- 電源B電圧の切り替え動作

パワーアンプの電源B電圧を音声出力電圧に対応して、高い低いの2段階を切り替える動作をする。(AVSS)
音声出力電圧はレベルコンパレーターで(QU05)で検出して、約23Vrmsを超えると、パワーアンプトランスの2次側にあるAVSSリレー(L802)をマイコン(QU08)が動かして電源B電圧を高い方に切り替える。

- 過熱保護動作

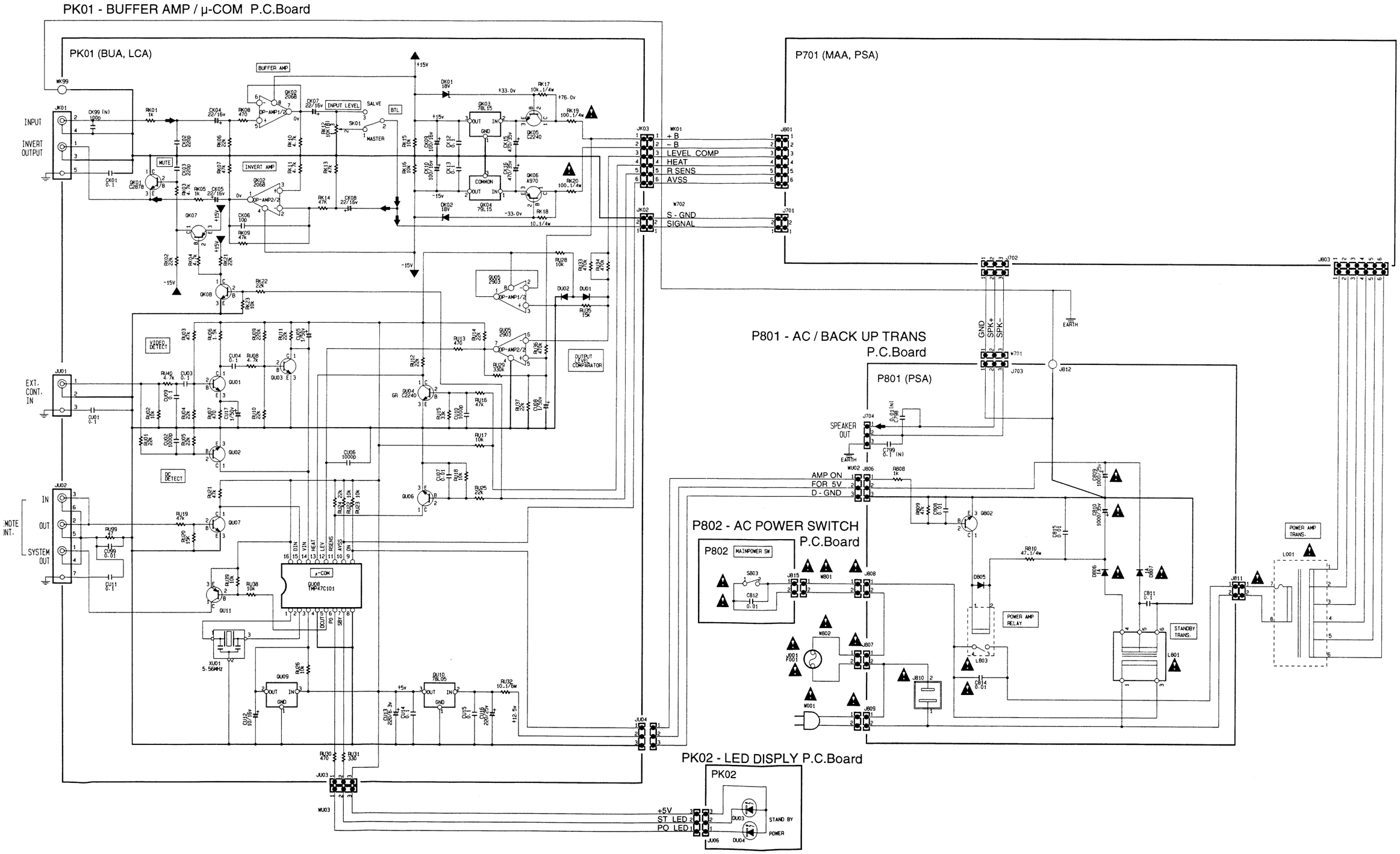
2段階ある電源B電圧を利用して、パワーアンプの過熱保護をする。
ヒートシンクにネジ止めされたポジスター(QN99)で温度検出を行い、マイコン(QU08)に読ませる。温度が100℃を超えると強制的に電源B電圧を低い方に固定して出力パワーを下げて、ヒートシンクの温度上昇を抑え過熱保護動作をする。

6. BLOCK DIAGRAM



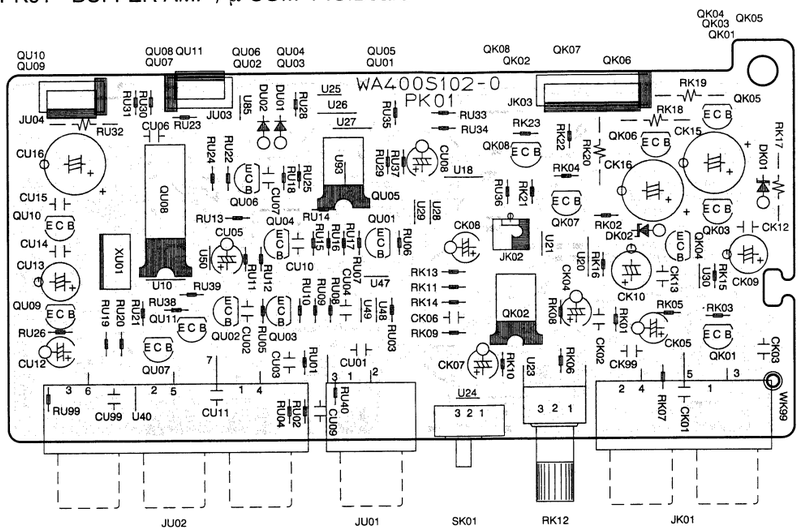
. SCHEMATIC DIAGRAM AND PARTS LOCATION (Pattern Side)

SCHEMATIC DIAGRAM (1)

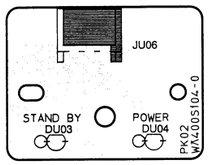


P.C BOARDS (1)

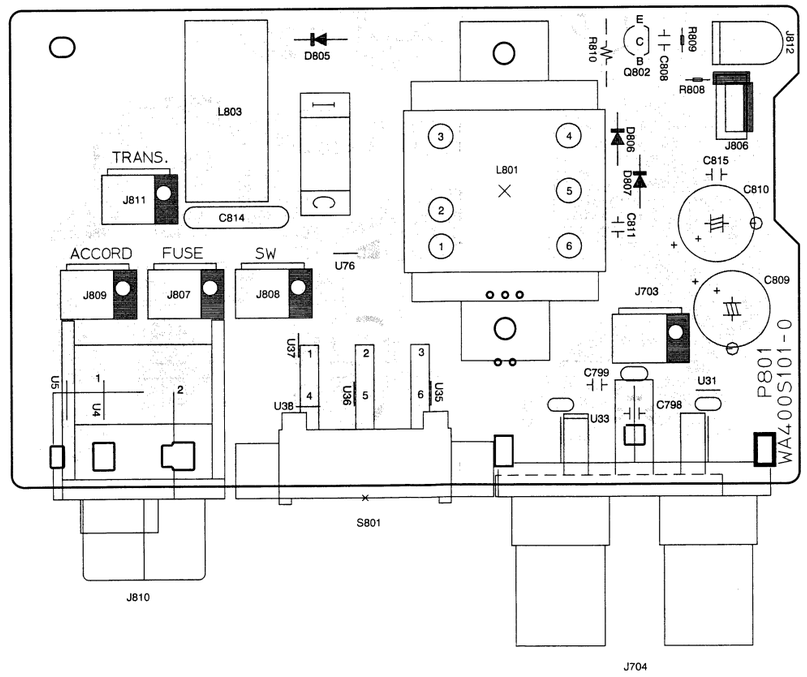
PK01 - BUFFER AMP / μ-COM P.C.Board



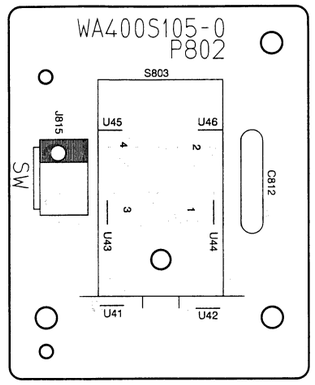
PK02 - LED DISPLY P.C.Board



P801 - AC / BACK UP TRANS P.C.Board

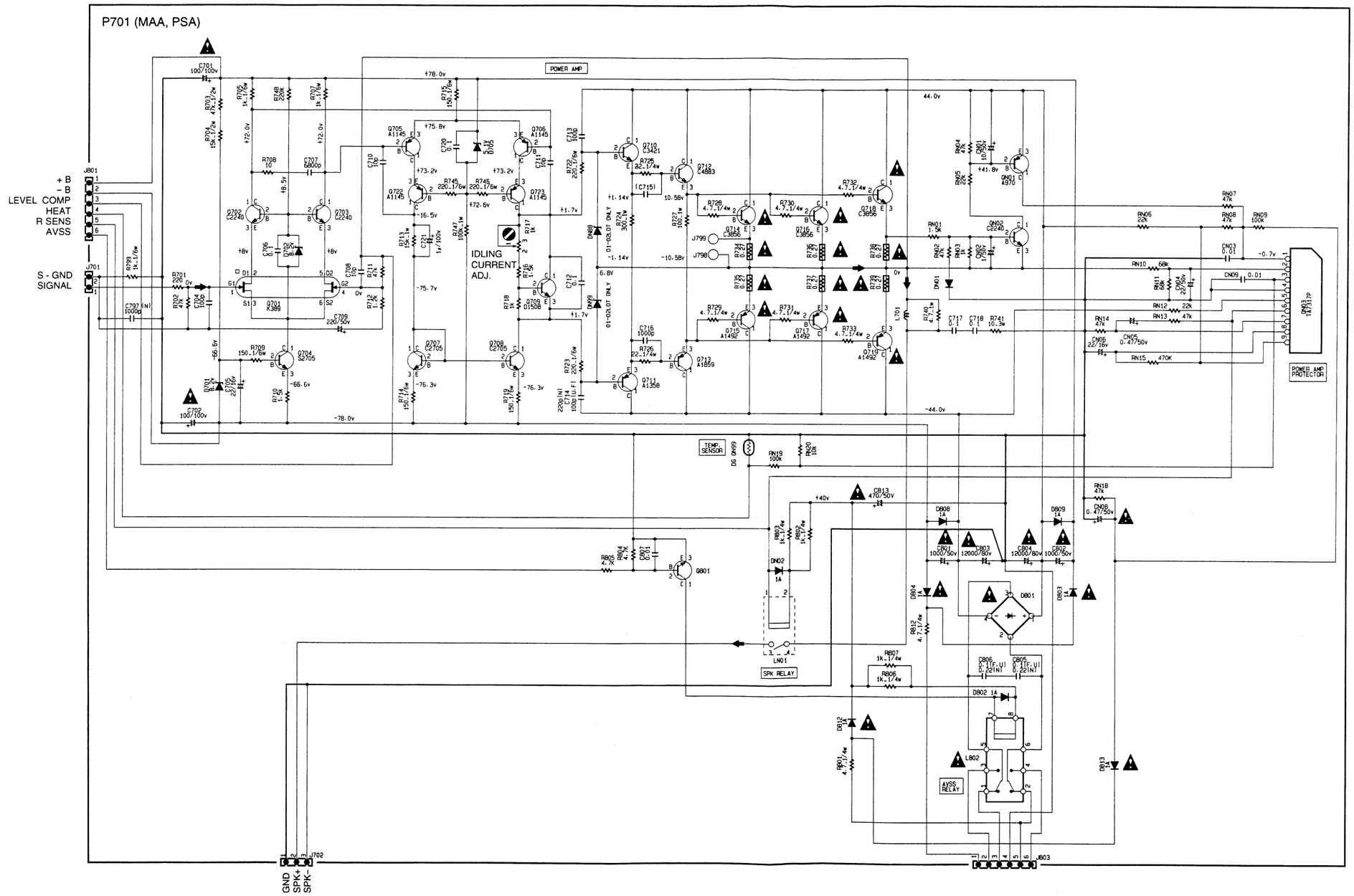


P802 - AC POWER SWITCH P.C.Board

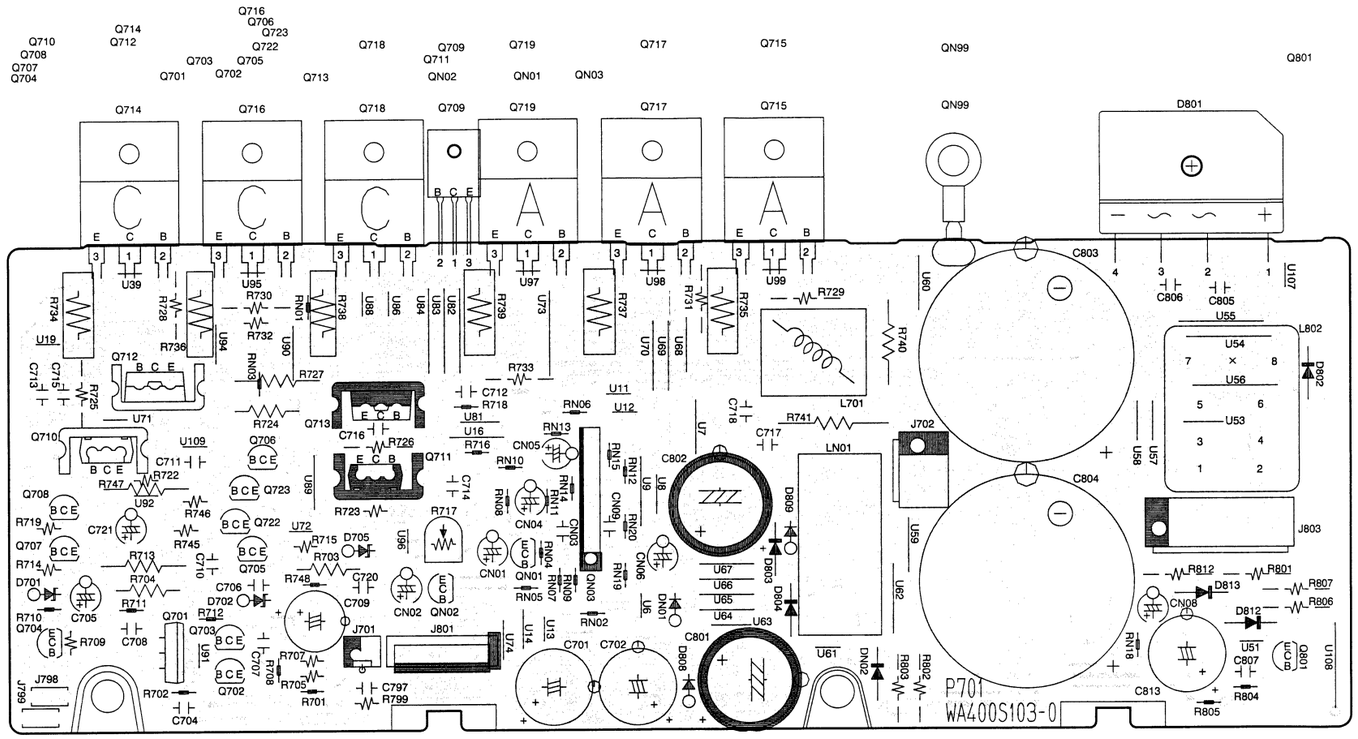


SCHEMATIC DIAGRAM (2)

P701 - POWER AMP P.C.Board



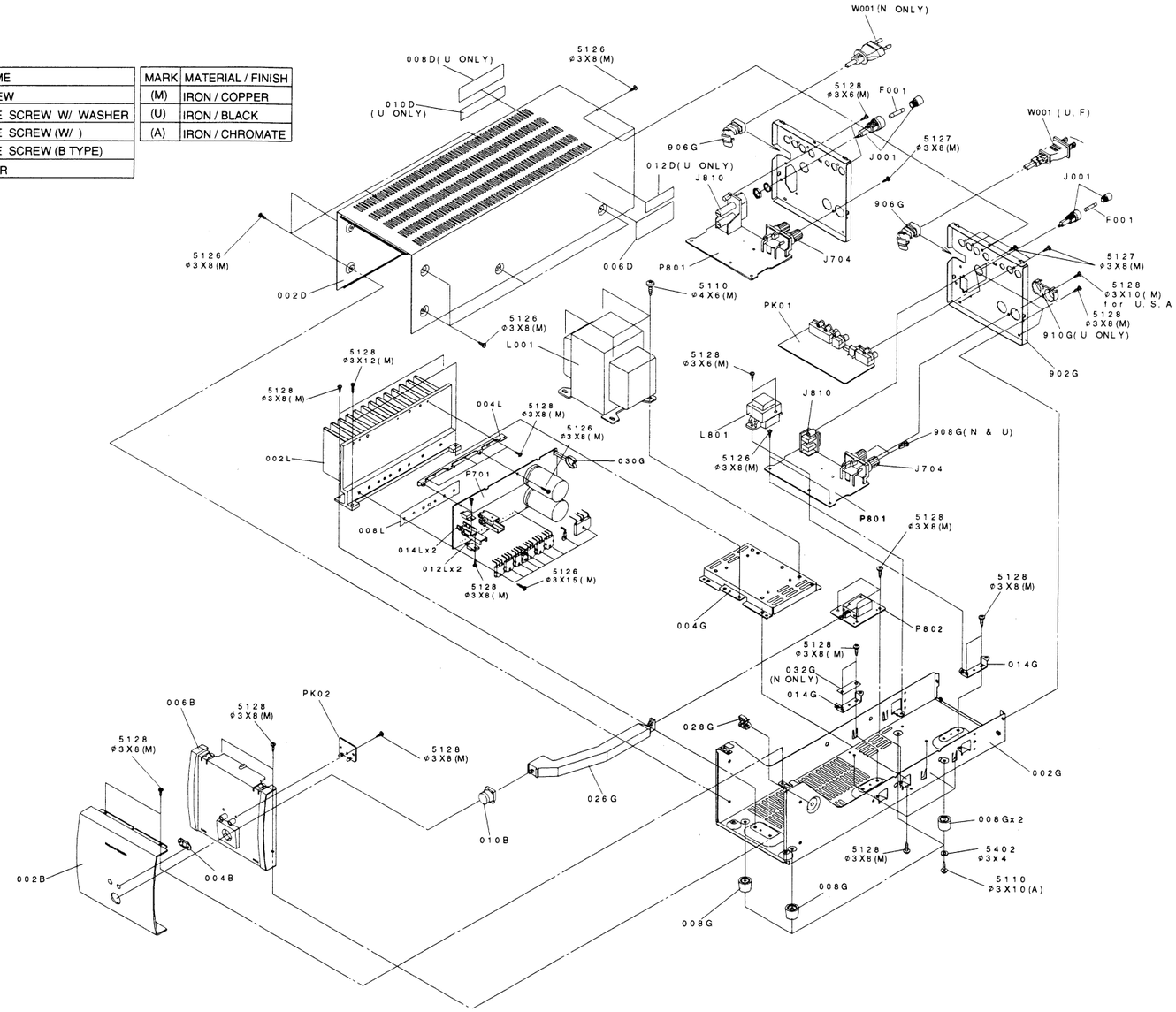
P701 - POWER AMP P.C.Board

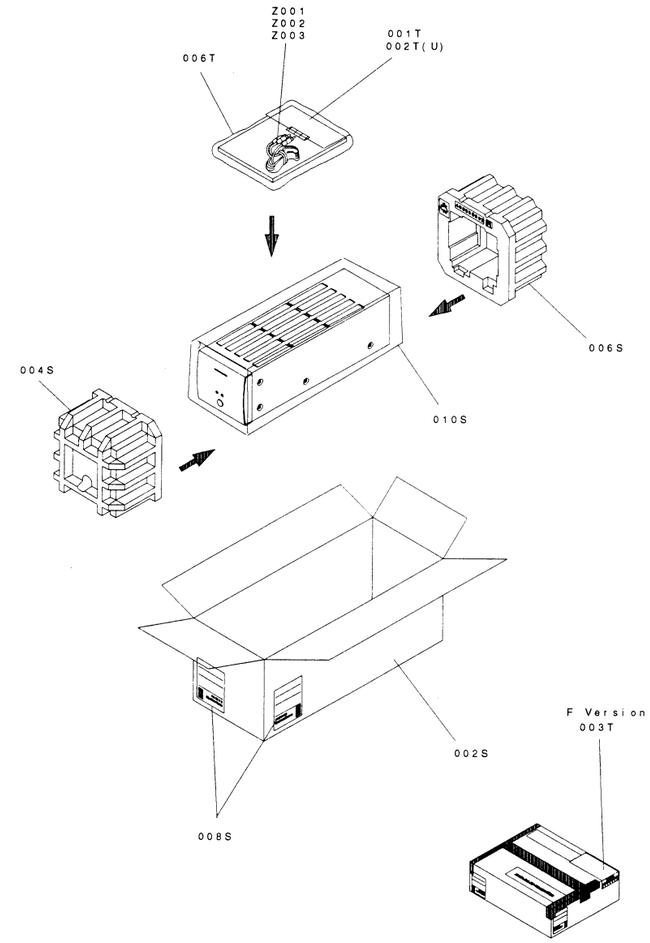


3. EXPLODED VIEW AND PARTS LIST

SYMBOL	STYLE	PARTS NAME
5110	⊗	+B.H.M. SCREW
5126	⊗	+B.H.TAP TITE SCREW W/ WASHER
5127	⊗	+B.H.TAP TITE SCREW (W/)
5128	⊗	+B.H.TAP TITE SCREW (B TYPE)
5402	◎	FLAT WASHER

MARK	MATERIAL / FINISH
(M)	IRON / COPPER
(U)	IRON / BLACK
(A)	IRON / CHROMATE





(VERS. : VERSION, U : U.S.A., F : JAPAN, K : FAR EAST, /XX : EUROPE)

POS. NO.	VERS. COLOR	PART NO. (FOR EUROPE)	DISCRIPTION	PART NO. (MJI)
002B	FB		FRONT PANEL,MA700	400S248020
002B	/02B UBL	4822 459 04694	FRONT PANEL,MA700	400S248010
004B		4822 381 11415	LENS,FOR FRONT PANEL	176J355010
006B			CHASSIS,FRONT	400S105030
010B		4822 410 11275	BUTTON,POWER	176J270050
008G		4822 462 42026	LEG,	176J057010
026G		4822 402 10791	LINK,FOR POWER SW.	400S121010
906G		4822 532 60948	BUSHING,MAINS CORD BUSH	450H259010
⚠ C814		4822 122 33276	CER.,DE7150 F 103M	DK17103840
⚠ F001	F,U		FUSE,8A 250V 30MM F	FS10800530
⚠ F001	/02	4822 253 30387	FUSE,T4A 250V 20MM N	FS10400850
⚠ L001	F		MAINS TRANSF.,MAIN, F	TS19639010
⚠ L001	/02	4822 146 10841	MAINS TRANSF.,MAIN, /02	TS19639030
⚠ L001	U		MAINS TRANSF.,MAIN, U	TS19639020
⚠ W001	F		MAINS CORD, F	YC01900180
⚠ W001	/02	4822 321 11343	MAINS CORD, /02	YC01800790
⚠ W001	U		MAINS CORD, U	YC01800780
			PACKING	
002S	F		PACKING CASE,	400S801010
004S	F		CUSHION,(FRONT)	400S809010
006S	F		CUSHION,(REAR)	400S809020
001T	F		USER MANUAL, F	400S851110
001T	/02	4822 736 15584	USER MANUAL, /02	400S851310
001T	U		USER MANUAL, U	400S851250
Z001			CONNECTIVE CORD,RCA RC-5 CORD 0.9M	ZD00900100
Z003			CONNECTIVE CORD,1PIN RCA CORD 1.5M	ZD01500370

ELECTRICAL PARTS LIST

ASSIGNMENT OF COMMON PARTS CODES.

RESISTORS

R＊＊＊ : 1) GD05 x x x 140, Carbon film fixed resistor, ±5% 1/4W
R＊＊＊ : 2) GD05 x x x 160, Carbon film fixed resistor, ±5% 1/6W
① Resistance value

Examples ;
① Resistance value

0.1 Ω 001	10 Ω 100	1k Ω.. 102	100k Ω 104
0.5 Ω 005	18 Ω 180	2.7k Ω.. 272	680k Ω 684
1 Ω 010	100 Ω 101	10k Ω.. 103	1M Ω 105
6.8 Ω 068	390 Ω 391	22k Ω.. 223	4.7M Ω 475

Note : Please distinguish 1/4W from 1/6W by the shape of parts used actually.

CAPACITORS

C＊＊＊ : CERAMIC CAP.
3) DD1 x x x x 370, Ceramic capacitor
Disc type
Temp.coeff. P350~N1000, 50V
③ Capacity value
② Tolerance

Examples
② ATolerance (Capacity deviation)
±0.25 pF 0
± 0.5 pF 1
± 5 % 5
＊ Tolerance of COMMON PARTS handled here are as follows :
0.5 pF - 5 p ..... ± 0,25 pF
6 pF - 10 pF ..... ± 0.5 pF
12 F - 560 pF ... ± 5 %
③ Capacity value

0.5 pF 005	3 pF 030	100 pF 101
1 pF 010	10 pF 100	220 pF 221
1.5 p 015	47 pF 470	560 pF ..... .561

C＊＊＊ : CERAMIC CAP.
4) DK16 x x x 300, High dielectric constant ceramic capacitor
Disc type
Temp.chara. 2B4, 50V
④ Capacity value

Examples
④ Capacity value
100 pF .....101 1000 pF .... 102 10000 pF 103
470 pF .....471 2200 pF 222

C＊＊＊ 5)ELECTROLY CAP.( ), 6)FILM CAP ( )
5) EA x x x x x x 10, Electrolytic capacitor
One-way lead typeTolerance ±20%
⑥ Working voltage
⑤ Capacity value

Examples
⑤ Capacity value

0.1µ F 04	4.7µ F 475	100µ F 107
0.33µ F 334	10µ F 106	330µ F 337
1µ F 105	22µ F 226	1100µ F 118
		2200µ F 228

⑥ Working voltage

6.3 V. . .006	25 V. . .025
10 V. . .010	35 V. . .035
16 V. . .016	50 V. . .050

6) DF15 x x x 350 → Plastic film capacitor
DF15 x x x 310 → One-way type, Mylar ±5% 50V
DF16 x x x 310 → Plastic film capacitor
One-way type, Mylar ±10% 50V
⑦ Capacity value

Examples
⑦ Capacity valu

0.001µ F (1000pF) 102	0.1µ F..... 104
0.0018µ F..... 182	0.56µ F..... 564
0.01µ F..... 103	1µ F..... 105
0.015µ F..... 151	

1) The above CODES(R＊＊＊,R＊＊＊,C＊＊＊,C＊＊＊ and C＊＊＊) are omitted on the schematic diagram in some case.
2) On the occasion, be confirmed the common parts on the parts list.
3) Refer to "Common Parts List" for the other common parts(**RI05, DD4, DK4**).

NOTE ON SAFETY FOR FUSIBLE RESISTOR :

The suppliers and their type numbers of fusible resistors are as follows ;
1 . KOA Corporation

Part No.(MJI)	Type No.(KOA)	Description
NH05 x x x 140	RF25S x x x x Ω J	(±5% 1/4W)
NH05 x x x 120	RF50S x x x x Ω J	(±5% 1/2W)
NH85 x x x 110	RF73B2A x x x x Ω J	(±5% 1/10W)
NH95 x x x 140	RF73B2E x x x x Ω J	(±5% 1/4W)

＊ Resistance value Resistance value(0.1 Ω- 10k Ω)

2. Matsushita Electronic Components Co., Ltd

Part No.(MJI)	Type No.(MEC)	Description
NF05 x x x 140	ERD-2FCJ x x x	(±5% 1/4W)
RF05 x x x 140		
NF02 x x x 140	ERD-2FCG x x x	(±2% 1/4W)
RF02 x x x 140		

＊ Resistance value

Examples :
＊ Resistance value

0.1 Ω 001	10 Ω 100	1k Ω .. 102	100k Ω 104
0.5 Ω 005	18 Ω 180	2.7k Ω .. 272	680k Ω 684
1 Ω 010	100 Ω 101	10k Ω .. 103	1M Ω 105
6.8 Ω 068	390 Ω 391	22k Ω .. 23	4.7M Ω 475

ABBREVIATION AND MARKS

ANT.	: ANTENNA	BATT.	: BATTERY
CAP.	: CAPACITOR	CER.	: CERAMIC
CONN.	: CONNECTING	DIG.	: DIGITAL
HP	: HEADPHONE	MIC.	: MICROPHONE
µ -PRO	: MICROPROCESSOR	REC.	: RECORDING
RES.	: RESISTOR	SPK	: SPEAKER
SW	: SWITCH	TRANSF.	: TRANSFORMER
TRIM.	: TRIMMING	TRS.	: TRANSISTOR
VAR.	: VARIABLE	X ' TAL	: CRYSTAL

NOTE ON SAFETY:

Symbol ⚠ Fire or electrical shock hazard. Only original parts should be used to replaced any part marked with symbol ⚠ . Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.

安全上の注意:

⚠ がついている部品は、安全上重要な部品です。必ず指定されている部品番号の部品を使用して下さい。

(VERS. : VERSION, U : U.S.A., F : JAPAN, K : FAR EAST, /XX : EUROPE)

POS. NO.	VERS. COLOR	PART NO. (FOR EUROPE)	DISCRIPTION	PART NO. (MJI)
			P701-POWER AMP	
			CIRCUIT BOARD	
			P701-PACITORS	
CN01		4822 124 22571	ELECT.,10μF ±20% 50V RA-2	OA10605020
CN02		4822 124 41543	ELECT.,1μF ±20% 50V RA-2	OA10505020
CN03		4822 122 30043	CER.,0.01μF +80%-20% 50V	DK18103310
CN04		4822 124 90362	ELECT.,22μF ±20% 50V RA-2	OA22605020
CN05		4822 124 22273	ELECT.,0.47μF ±20% 50V RA2	OA47405020
CN06		4822 124 90358	ELECT.,22μF ±20% 16V RA-2	OA22601620
CN08		4822 124 22273	ELECT.,0.47μF ±20% 50V RA2	OA47405020
CN09		4822 122 30043	CER.,0.01μF +80%-20% 50V	DK18103310
▲ C701		4822 124 80771	ELECT.,100μF 100V	OA10710020
▲ C702		4822 124 80771	ELECT.,100μF 100V	OA10710020
C705		4822 124 90358	ELECT.,22μF ±20% 16V RA-2	OA22601620
C707		4822 121 70179	FILM CAP., 0.0068μF 100V	DF15682550
C708		4822 123 30088	MICA,10pF D 250WV AUDIO	DF31100520
C709		4822 124 90366	ELECT.,220mF ±20% 50V RA-2	OA22705020
C710		4822 123 30088	MICA,10pF D 250WV	DF31100520
C711		4822 123 30088	MICA,10pF D 250WV	DF31100520
C713		4822 121 42712	FILM CAP., 100pF 100V	DF15101550
C714	F,U	4822 121 42712	FILM CAP., 100pF 100V	DF15101550
C714	/02	4822 121 42344	FILM CAP., 220pF 100V	DF15221550
C721			ELECT.,1μF 100V	OA10510020
▲ C801		4822 124 23918	ELECT.,ELNA RA2 16X25	OA10805020
▲ C802		4822 124 23918	ELECT.,ELNA RA2 16X25	OA10805020
▲ C803		4822 124 12041	ELECT,12μF 82V	EB12908210
▲ C804		4822 124 12041	ELECT,12μF 82V	EB12908210
C805	F,U	4822 122 40617	CER.,50V 0.1μF +80% -20%	DD38104010
C806	F,U	4822 122 40617	CER.,50V 0.1μF +80% -20%	DD38104010
C807		4822 122 30043	CER.,0.01μF +80%-20% 50V	DK18103310
▲ C813		4822 124 41542	ELECT.,470μF ±20% 50V RA-2	OA47705020
			P701-CAPACITORS(COMMON)	
C***			PLASTIC FILMCAP.,	
			±5% 50V:	
			C706, C712, C717, C718, C720,	
			C805(02B), C806(02B)	
C***			HIGH DIELECTRIC	
			CONSTANT CERAMIC CAP.	
			±10% 50V:	
			C704, C716, C797(/02B)	
			P701-RESISTORS	
R703			47kΩ ±5% 1/2W	GG05473120
R704		4822 050 21503	15kΩ ±5% 1/2W	GG05153120
R705		4822 052 10102	1kΩ ±5% 1/6W	GG05102160
R707		4822 052 10102	1kΩ ±5% 1/6W	GG05102160
R709		4822 052 10151	150Ω ±5% 1/6W	GG05151160
R713		4822 116 51848	10kΩ ±5% 1W	GA05153010
R714		4822 052 10151	150Ω ±5% 1/6W	GG05151160
R715		4822 052 10151	150Ω ±5% 1/6W	GG05151160
R717		4822 100 11386	TRIMMING,1kW RH0683C13R	RA01020780
R719		4822 052 10151	150Ω ±5% 1/6W	GG05151160
R722		4822 052 10221	220Ω ±5% 1/6W	GG05221160
R723		4822 052 10221	220Ω ±5% 1/6W	GG05221160
R724		4822 117 10003	330Ω ±5% 1/2W	GG05331120
R725		4822 050 22209	22Ω ±5% 1/4W	GG05220140
R726		4822 050 22209	22Ω ±5% 1/4W	GG05220140
R727		4822 116 60327	100Ω ±5% 1W	GA05101010
R728				
I		4822 050 24708	4.7Ω ±5% 1/4W	GG05047140
R733				

POS. NO.	VERS. COLOR	PART NO. (FOR EUROPE)	DISCRIPTION	PART NO. (MJI)
▲ R734				
I		4822 116 53302	0.27Ω ±10% 5W	GO10272050
▲ R739				
R740		4822 053 10478	4.7Ω ±5% 1W	GA05047010
R741		4822 116 83353	METAL ,10Ω ±5% 3W	NK05100030
R745		4822 052 10221	220Ω ±5% 1/6W	GG05221160
R746		4822 052 10221	220Ω ±5% 1/6W	GG05221160
R747			100kΩ ±5% 1W	GA05104010
R799		4822 052 10102	1kΩ ±5% 1/6W	GG05102160
R801		4822 050 24708	4.7Ω ±5% 1/4W	GG05047140
R802				
I		4822 050 21022	1kΩ ±5% 1/4W	GG05102140
R807				
R812		4822 050 24708	4.7Ω ±5% 1/4W	GG05047140
			P701-RESISTORS(COMMON)	
R***			CARBON FILM FIXED RES.,	
			±5% 1/6W:	
			R701, R702, R708, R710-R712,	
			R716, R718, R748, R804, R805,	
			RN01-RN15, RN18-RN20	
			P701-SEMICONDUCTORS	
DN01		4822 130 80837	DIODE,HSS81TD 150V 150MA	HD20027010
DN02		4822 130 32508	DIODE,1A 10MM	HD20003000
D701		4822 130 80273	ZENER DIODE,	
			8.2VEQUIVALENT	HD30821000
D702		4822 130 80273	ZENER DIODE,	
			8.2VEQUIVALENT	HD30821000
D705		4822 130 80317	ZENER DIODE,	
			5.1VEQUIVALENT	HD30511000
▲ D801		4822 130 83438	DIODE,D5SB-20 I=6.0A	
			V=200V	HE20016290
D802		4822 130 32508	DIODE,RL103E/DSF10C	HD20003000
▲ D803		4822 130 32508	DIODE,RL103E/DSF10C	HD20003000
D804		4822 130 32508	DIODE,RL103E/DSF10C	HD20003000
D808		4822 130 80839	DIODE,1A 5MM	HD20029050
D809		4822 130 80839	DIODE,1A 5MM	HD20029050
▲ D812		4822 130 32508	DIODE,RL103E/DSF10C	HD20003000
▲ D813		4822 130 32508	DIODE,RL103E/DSF10C	HD20003000
QN01		4822 130 42949	TRS.2SA970 GR OR BL	HT109702AO
QN02		4822 130 43233	TRS.2SC2240 GR OR BL	HT322402AO
QN03		4822 209 83312	IC,TA7317P	HC10042050
QN99		4822 126 90009	VARISTOR,TEMP SENSOR	HP00029230
Q701		4822 130 42843	F.E.T.,2SK389 GR OR BL	HF203892AO
Q702		4822 130 43233	TRS.2SC2240 GR	HT322401AO
Q703		4822 130 43233	TRS.2SC2240 GR	HT322401AO
Q704		4822 130 43283	TRS.2SC2705 O OR Y	HT327052AO
Q705		4822 130 42999	TRS.2SA1145 O OR Y	HT111452AO
Q706		4822 130 42999	TRS.2SA1145 O OR Y	HT111452AO
Q707		4822 130 43283	TRS.2SC2705 O OR Y	HT327052AO
Q708		4822 130 43283	TRS.2SC2705 O OR Y	HT327052AO
Q709		4822 130 60526	TRS.2SD1508 DARLINGTON	
			TR.HFE>4000	HT415080AO
Q710		4822 130 60354	TRS.2SC3421 PRE DRIVER	HT334212AO
Q711		4822 130 60353	TRS.2SA1358 PRE DRIVER	HT348832AO
Q712		4822 130 63312	TRS.2SC4883 DRIVER	HT348832AO
Q713		4822 130 63308	TRS.2SA1859 DRIVER	HT118592AO
Q714		4822 130 10962	TRS.2SC3856 130W	HT338563AO
Q715		4822 130 10963	TRS.2SA1492 130W	HT114923AO
Q716		4822 130 10962	TRS.2SC3856 130W	HT338563AO
Q717		4822 130 10963	TRS.2SA1492 130W	HT114923AO
Q718		4822 130 10962	TRS.2SC3856 130W	HT338563AO

(VERS. : VERSION, U : U.S.A., F : JAPAN, K : FAR EAST, /XX : EUROPE)

POS. NO.	VERS. COLOR	PART NO. (FOR EUROPE)	DISCRIPTION	PART NO. (MJI)
Q719		4822 130 10963	TRS.2SA1492 130W	HT114923A0
Q722		4822 130 42999	TRS.2SA1145 O OR Y	HT111452A0
Q723		4822 130 42999	TRS.2SA1145 O OR Y	HT111452A0
Q801		4822 130 43233	TRS.2SC2240 GR OR BL	HT322402A0
			P701-MISCELLANEOUS	
⚠ LN01		4822 280 10343	RELAY,VS24MBU-551 SPK OUT	LY10240270
L701		4822 157 52453	COIL,0.5mH 1.6PEW 12MM-D 7-1/2T	LJ31115080
⚠ L802		4822 280 20403	RELAY,LY2-0 AVSS	LY20240350
			P801-AC & BACK UP TRANS. CIRCUIT BOARD	
			P801-CAPACITORS	
C798	/02	4822 122 30043	CER.,0.01μF +80%-20% 50V	DK18103310
C799	/02	4822 122 40617	CER.,0.1μF 50V	DD38104010
C808		4822 122 30043	CER.,0.01μF +80%-20% 50V	DK18103310
⚠ C809		4822 124 22723	ELECT.,1000μF ±20% 25V RA2	OA10802520
⚠ C810		4822 124 90356	ELECT.,1000μF ±20% 35V RA2	OA10803520
C811		4822 122 40617	CER.,50V DC 0.1μF +80 -20%	DD38104010
C815		4822 122 30043	CER.,0.01μF +80%-20% 50V	DK18103310
			P801-RESISTORS	
R810		4822 052 10479	47Ω ±5% 1/4W	GG05470140
			P801-RESISTORS(COMMON)	
R***			CARBON FILM FIXED RES., ±5% 1/6W:R808, R809	
			P801-SEMICONDUCTOR	
⚠ D807		4822 130 32508	DIODE,RL103E DSF10C	HD20003000
Q802		4822 130 43233	TRS.2SC2240 GR OR BL	HT322402A0
			P801-MISCELLANEOUS	
J704	F		TERMINAL,SPK BANANA	YT01020260
J704	/02,U	4822 290 81596	TERMINAL,SPK BRN/RED 94-V1 [U]	YT01020190
⚠ J810	F,U	4822 267 31262	JACK,AC OUTLET 1P	YJ04001590
⚠ J810	/02	4822 267 31194	JACK,AC SOKET YKE31-0090	YJ04001640
⚠ L801	F		POWER TRANSF.,STAND BY	TS13516040
⚠ L801	/02	4822 146 21569	POWER TRANSF.,STAND BY	TS13516070
⚠ L801	U	4822 146 21577	POWER TRANSF.,STAND BY	TS13516060
⚠ L803		4822 280 80773	RELAY,POWER VS 24MB-NR-UL	LY10240240
			P802-AC POWER SW CIRCUIT BOARDS	
			P802-CAPACITORS	
⚠ C812		4822 122 33276	CER.,DE7150 F 103M	DK17103840
			P802-MISCELLANEOUS	
⚠ S803		4822 276 13892	PUSH SW.,SDDFC3 TV-8 ALPS STROKE 1.5MM	SP02012260

POS. NO.	VERS. COLOR	PART NO. (FOR EUROPE)	DISCRIPTION	PART NO. (MJI)
			PK01-BUFFER AMP & μ-COM CIRCUIT BOARD	
			PK01-CAPASITORS	
CK01		4822 122 40617	CER.,50V DC 0.1μF +80 -20%	DD38104010
CK04		4822 124 90358	ELECT.,22μF ±20% 16V RA-2	OA22601620
CK05		4822 124 90358	ELECT.,22μF ±20% 16V RA-2	OA22601620
CK06		4822 122 32185	CER.,10pF D CH 50V BLK	DD11100300
CK07		4822 124 90358	ELECT.,22μF ±20% 16V RA-2	OA22601620
CK08		4822 124 90358	ELECT.,22μF ±20% 16V RA-2	OA22601620
CK09		4822 124 90354	ELECT.,100μF ±20% 16V RA-2	OA10701620
CK10		4822 124 90354	ELECT.,100μF ±20% 16V RA-2	OA10701620
CK12		4822 122 40617	CER.,50V DC 0.1μF +80 -20%	DD38104010
CK13		4822 122 40617	CER.,50V DC 0.1μF +80 -20%	DD38104010
CK15		4822 124 41541	ELECT.,470μF ±20% 35V RA-2	OA47703520
CK16		4822 124 41541	ELECT.,470μF ±20% 35V RA-2	OA47703520
CK99	/02B	5322 122 32265	CER.,100pF ±5% CH 50V BLK	DD15101300
CU01		4822 122 40617	CER.,50V DC 0.1μF +80 -20%	DD38104010
CU05		4822 124 41543	ELECT.,1μF ±20% 50V RA-2	OA10505020
CU07		4822 122 30043	CER.,0.01μF +80%-20% 50V	DK18103310
CU08		4822 124 41543	ELECT.,1μF ±20% 50V RA-2	OA10505020
CU11		4822 122 40617	CER.,50V DC 0.1μF +80 -20%	DD38104010
CU12		4822 124 90352	ELECT.,10μF ±20% 16V RA-2	OA10601620
CU13		4822 124 41537	ELECT.,220μF ±20% 6.3V RA2	OA22700620
CU14		4822 122 40617	CER.,50V DC 0.1μF +80 -20%	DD38104010
CU15		4822 122 40617	CER.,50V DC 0.1μF +80 -20%	DD38104010
CU16		4822 124 90365	ELECT.,220μF ±20% 25V RA-2	OA22702520
CU17		4822 124 23053	ELECT,1μF /50V	EJ10505010
			PK01-CAPASITORS(COMMON)	
C***			PLASTIC FILM CAP., ±5% 50V:CU03, CU04, CU09	
C***			HIGH DIELECTRIC CONSTANT CERAMIC CAP. ±10% 50V: CK02, CK03, CU02, CU06, CU10	
			PK01-RESISTORS	
RK12		4822 101 11798	VAR.,RK09K111(B) 10kΩ	RK01031470
RK17		4822 111 91252	10kΩ ±5% 1/4W RES.	GG05103140
RK18		4822 111 91252	10kΩ ±5% 1/4W RES.	GG05103140
RK19		4822 111 90744	FUSIBLE,100Ω ±5% 1/4W	NH05101140
RK20		4822 111 90744	FUSIBLE,100Ω ±5% 1/4W	NH05101140
RU32		4822 052 10109	10Ω ±5% 1/6W	GG05100160
RU99		4822 126 12496	CER.,0.01mF 50V	DD38103010
			PK01-RESISTORS(COMMON)	
R***			CARBON FILM FIXED RES., ±5% 1/6W: CU99, RK01-RK11, RK13-RK16, RK21-RK23, RU01-RU26, RU28-RU31, RU33-RU40	
			PK01-SEMICONDUCTOR	
DK01		4822 130 80838	ZENER DIODE, 18VEQUIVALENT	HD31801000
DK02		4822 130 80838	ZENER DIODE, 18VEQUIVALENT	HD31801000
DU01		4822 130 32362	DIODE,1SS176,MA165,1SS254 30V 0.1A	HD20002000
DU02		4822 130 32362	DIODE,1SS176,MA165,1SS254 30V 0.1A	HD20002000

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POS. NO.	VERS. COLOR	PART NO. (FOR EUROPE)	DISCRIPTION	PART NO. (MJI)
QK01		4822 130 43818	TRS. 2SC2878 MUTE TR	HT328782A0
QK02		4822 209 73064	IC,NJM-2068-DD	HC10053090
QK03		4822 209 71038	IC,NJM78L15A +15V 0.1A	HC38115090
QK04		4822 209 71039	IC,NJM79L15A -15V 500MW	HC39115090
QK05		4822 130 43233	TRS.2SC2240 GR OR BL	HT322402A0
QK06		4822 130 42949	TRS.2SA970 (GR) OR (BL)	HT109702A0
QK07		4822 130 42949	TRS.2SA970 (GR) OR (BL)	HT109702A0
QK08		4822 130 42298	TRS.2SC536SP, 2SC2458, 2SC3311, 2SC1740S	HT30001000
QU01 I QU03		4822 130 42298	TRS.2SC536SP, 2SC2458, 2SC3311, 2SC1740S	HT30001000
QU04		4822 130 43233	TRS.2SC2240 (GR)	HT322401A0
QU05		4822 209 83088	IC,NJM2903D DUAL COMPARATOR	HC10022090
QU06 I QU07		4822 130 42298	TRS.2SC536SP, 2SC2458, 2SC3311, 2SC1740S	HT30001000
QU08		4822 20915768	MICROPROCESSOR TMP47C201P DIP	HU400ST000
QU09		4822 209 14883	IC,V-SENSOR S-806C 4.55V	HC10075530
QU10		4822 209 71373	IC,NJM78L05A	HC38105090
QU11		4822 130 42715	TRS.2SA608SP, 2SA1048, 2SA1309, 2SA933S	HT10001000
			PK01-MISCELLANEOUS	
JK01		4822 265 20355	TERMINAL,RCA AUDIO IN/INVERT OUT	YT02020650
JK02		4822 267 31203	JACK,B2B-PH-K-S	YJ06006220
JU01		4822 265 11043	TERMINAL,VIDEO BUS IN	YT02010730
JU02		4822 265 11044	TERMINAL,D-BUS IN/OUT/SYSTEM OUT	YT02030470
SK01		4822 277 11716	SLIDE SW.,SSSS9 1-POLE 2-POSITION BTL	SS01020730
XU01		4822 242 72592	SER.VIB.,CST 5.56MGW-TF01	FQ05564010
			PK02-LED DISPLAY CIRCUIT BOARD	
			PK02-SEMICONDUCTORS	
DU03		4822 130 80326	L.E.D.,STAND BY LED	HI10062320
DU04		4822 130 81715	L.E.D.,POWER LED	HI10095320